Please note: Ameren Illinois is providing this information as part of a Commission Staff-initiated workshop. Given that these discussions pertain to past litigation and may ultimately culminate in additional contested cases in the future, Ameren Illinois considers this information to be distributed in the context of a confidential settlement discussion, subject to Illinois Rule of Evidence 408.

Ameren Illinois appreciates this opportunity to provide comments related to the Illinois Commerce Commission's March 1 Distributed Generation Valuation and Compensation workshop and the associated Distributed Generation Valuation and Compensation white paper. Developing an accurate, fair, and manageable distributed generation valuation methodology is important to ensure a) customers have appropriate information to base economic decisions, b) utilities can efficiently and effectively manage the distribution system, and c) the State can meet its energy goals.

Ameren Illinois believes that the determination of the value of distributed generation to the distribution system may be guided by a few key concepts.

1. While the term distributed generation will be used throughout these comments to be consistent with the Future Energy Jobs Act (FEJA), a more widely used term that may better encompass the full breadth of technologies and applications that may be connected to the distribution grid is distributed energy resource or DER. Ameren Illinois considers a broad definition of DER in which DER is defined to broadly encompass any generation, storage, or other load managing resource connected to the distribution grid.
2. FEJA calls for an assessment of the value of distributed generation to the distribution system. While distributed generation may provide value in other channels (i.e., generation, transmission, ancillary services), and to various parties (i.e. customer, society, grid), the focus contemplated by FEJA is the value to the distribution system.
3. When considering the value of distributed generation to the distribution system, the valuation should take into account:
    a. The specific location on the distribution system, theoretically down to the distribution line transformer.
    b. The times of day, week, or year it is available, and during what types of weather.
    c. The capabilities the distributed generation can provide (real power, reactive power, or both).
    d. Other distributed generation operating characteristics (ramp rates, voltage support, dispatch ability, etc.)

The February 2018 white paper discusses how other states have addressed valuation and compensation schemes for distributed generation, with an eye toward searching for techniques that may be useful for Illinois to consider. As stated within the white paper, and reinforced at the workshop on March 1, 2018, context is important. No states appear to have adopted identical approaches. Their situations are different. Similarly, the Illinois context is different. Several questions have been posed to help frame the Illinois context and advance the discussion on how to comply with distributed generation

valuation contemplated by FEJA. Ameren Illinois responses to the specific questions are provided below.

a) Should the calculated values be limited to the value of distributed energy systems to the distribution network? If not, what other identifiable benefits of distributed energy systems should be included in the values calculated in accordance with Section 16-107.6?

Yes – the calculated values for the distributed generation rebate should be limited to the value of distributed generation to the distribution grid.

b) What are the types of values that distributed energy systems provide to the distribution network?

There are three types of value that distributed generation provides to the distribution system:

1. Avoided distribution capacity costs
2. Reduction in distribution losses,
3. Value of voltage support that may be realized from distributed generation.

There is naturally a small utility operations (O&M reduction) component that could also be included in these three distribution system elements. These all should be based on the particular location on the distribution grid, the capabilities of the distributed generation, and the time of day.

c) How does each type of value that distributed energy systems provide to the distribution network (identified in part (b)) vary geographically?

All three types of value identified in part (b) are directly dependent on the exact location the distributed generation is connected to the distribution system, and the characteristics and load patterns of the circuit to which the distributed generation is connected. For example, if a solar photo-voltaic distributed generator is connected to the distribution at a location up-stream of a capacity constraint, it will have no value to the distribution system to alleviate this particular constraint.

d) How does each type of value that distributed energy systems provide to the distribution network (identified in part (b)) vary across time?

All three types of value identified in part (b) will vary hour by hour, day by day, season by season depending on the load of the circuit and the capabilities of the distributed generation.

e) How does each type of value that distributed energy systems provide to the distribution network (identified in part (b)) depend upon the distributed energy system technology?

All three types of value identified in part (b) will vary with the capabilities of the distributed generation technology. For example, if the capacity constraint on a particular circuit occurs at 6:00 PM on a December day, it is unlikely that a photo-voltaic distributed generator will be capable of providing energy during this time, thus it will have no value to the distribution system to alleviate this particular constraint.

f) What information is necessary to calculate each type of value? Is such information available publicly?

Generally, the types of data necessary include, but are not limited to:

- Accurate Electrical Models
  - Load Models
  - Distributed Generation Models
  - Connectivity Models
- Measurement Data
  - Supervisory Control and Data Acquisition (SCADA)
  - AMI
- Accounting and Cost Modeling
  - Asset Capital and O&M Cost

Generally, for safety and security reasons, this type of data is not publically available.

g) How can each type of value that a distributed energy system provides to the grid (i.e., the systems actual performance) be evaluated?

The operating characteristics of the specific type of distributed generation should be modeled over a specific time period (ex – hourly energy output over a year), and this specific capability compared to the needs of the circuit at the specific location to be connected.

h) If you identified the value of distributed energy systems benefits other than benefits to the distribution network, please address questions (b) – (g) with respect to such other identifiable benefits.

As explained above, the value of the distributed generation rebate should be based solely on the value to the distribution grid.

i) Considering available information, how should distributed generation energy resource benefits be calculated?

The process should generally include:

1. System capacity studies starting at the smallest distribution system asset level (distribution line transformer) then aggregate results upstream towards the bulk supply sub-transmission power transformer. These studies could compare baseline system capacity (current state of the distribution system) against cases of distributed generation penetration at specific locations on the distribution system.
2. System line loss study comparing baseline (current state of the distribution system) against cases with distributed generation penetration at specific locations of the distribution system.
3. System reliability studies including voltage, protection and phase balance comparing baseline (current state of the distribution system) against cases with distributed generation penetration at specific locations of the distribution system.
4. Using the above results, an economic analysis could be used to determine the value of distributed generation at the specified location on the distribution system.